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THE ZEEHAN AND DUNDAS SILVER FIELD, TASMANIA.*

By W. F. A. THOMAS.

THE West Coast of Tasmania, traditionally bleak and inhospitable, has, within the last eight years, become the scene of active mining operations on the Zeehan and Dundas silver lead field, which is now supporting over 4000 inhabitants.

Communication.

The seaport for the district is Strahan, situated on Macquarie Harbour, which was noted in the beginning of this century for its convict station on Sarah Island. Since the end of 1891, 28 miles of railway in a northerly direction connect Strahan with the town of Zeehan, lying at the foot of Mount Zeehan, and about 12 miles due east of the coast. Communication is kept up between Strahan and Hobart, Launceston, or Melbourne by small steamers of about 100 tons, the bar at the mouth of Macquarie Harbour, on which there are about 7 to 8 feet of water, being at present an obstacle to larger vessels catering for the trade. There is telegraphic communication with Hobart and Launceston, and an overland mail service once a week from Waratah, but the chief mails all come round by boat, and in rough weather are often considerably delayed.

The place would, undoubtedly, be greatly benefited by alternative railway communication through Waratah, but so far neither the Government nor private capital have been enterprising enough to invest in the undertaking, though the route has already been surveyed.

Topography.

The most marked topographical feature of the Zeehan district is the exceeding irregularity of its contours. There is very little flat country, and what appear, when viewed from a height, to be open plains covered with what is locally termed "button grass," are found on descending to them to be all more or less hilly. The highest peak of the district is Mount Dundas (nearly 4000 feet), from which a range of hills extends northward and westward, forming the watershed between the Pieman river on the north and the Henty river on the south. About 14 miles to the west of Mount Dundas, Mounts Heemskirk and Agnew stand out in bold peaks, and about 10 miles to the W.S.W. Mount Zeehan rises to 3000 feet. The intervening country is all more or less hilly, and immediately north of Mount Zeehan, beyond its steep foot-hills, the town of Zeehan lies spread out in a narrow winding valley. To the east and south-east hilly bush-covered country extends, closed in on the horizon by the rugged outlines of the "west coast range," including Mounts Sorrell, Huxley, Owen, Lyell, Sedgwick, and Tyndall. To the south the same hilly country extends to Macquarie Harbour.

Geology.

The rocks of the Zeehan and Dundas silver field, which is the subject of the present paper, may be briefly described as forming a huge syncline of Upper Silurian strata, with an average strike of N.N.W.—S.S.E.

The edges of these strata are tilted upon the S.W. by a Lower Silurian quartzite conglomerate, the denuded outcrop of which forms Mount Zeehan, and on the N.E. by the quartzite of Mount Dundas. To the W. they are cut off by the intrusion of granite, forming Mounts Heemskirk and Agnew, while their limits to the N. and S. are not yet well defined.

There is also undoubted evidence of volcanic activity during the period these strata were laid down, rocks of volcanic origin penetrating them, and beds of volcanic conglomerate being interstratified with the slates.

The most important rock in the silver field, inasmuch as it constitutes the richest part, is a rock known to the local miners as the "white or grey country." It is still a question admitting of considerable discussion whether this rock is a volcanic tuff, forming beds interbedded with the slates, or is an intrusive rock, cutting through the strata in dykes. Whether interbedded or intrusive, it seems to run with the general strike of the country, N.N.W.—S.S.E., but where opened up in the mines, the country is so crumpled, folded, and dislocated by faults that no positive evidence could be gathered as to its relation to the contiguous black slates.

This volcanic rock is a grey greenish, in some places dark green, hard rock, weathering to a soft red or yellow earth, amygdaloidal, the cavities being filled with dolessite, siderite, calcite, and rarely with quartz. It gets very hard at a depth of a few hundred feet, where it is less decomposed. Here it apparently consists chiefly of altered Plagioclase felspar and augite, with its characteristic decomposition products, and both physical and chemical characteristics point to it being a melaphyre. The rock has undergone considerable metamorphism, as is frequently the case with the igneous rocks of silver-bearing regions.

At the surface, as at the Western Mine, it has the appearance of a tufaceous conglomerate; but such a transition in a volcanic igneous rock is not without its precedent. Gustav Bischof, in his "Chemical and Physical Geology," Vol. III., p. 354, says:—"Scrope Scrutherlet states that the basalt and tuff in the phonolite district of the Rhön generally contain such a quantity of phonolite fragments that they appear like *phonolitic conglomerate* with basaltic cementing material."

This is a purely local condition, and is evidently the result of decomposition.

The rock appears confined to the black slates in a line due north of Mount Zeehan, and, if interbedded, is limited in extent, as it does not appear on the east side of the syncline at Dundas. It is noteworthy that its presence appears to influence the mineral contents of the ore veins to a considerable extent, a fact to be referred to more fully later on.

Beyond the black slates in conjunction with this dyke rock, and overlying them to the east, there is a distinct zone, poor in silver, ushered in by a thin and irregular bed of black limestone, in parts highly fossiliferous. As very often happens with limestone beds, it widens and pinches out irregularly, appearing on the Silver Crown and Despatch claims, and then disappearing to the S.S.E., till it makes again on the Pyramid claim and at Argenton. Overlying this limestone is a bed of fossiliferous grey sandstone (which is in parts sufficiently hard and silicious to serve as road metal for Zeehan), followed by bluish-black slates. All the galena lodes in these rocks have proved poor in silver, varying from 10 to 40 ounces to the ton, and operations on them, formerly carried on by the Silver Crown, Despatch, Silver King, Pyramid, and other silver mining companies, have been abandoned. On the Silver Bell work is still carried on by tributers, some of the galena here carrying rather more silver than the average.

Towards the N.E. end of the field at Dundas irregular serpentine belts cross the country, and have a marked influence on mineral deposits in their vicinity.

The Lodes.

The lodes of this district that are exploited for their silver and lead contents may be classed under two distinct heads:—

A. Fissure veins.
B. Irregular deposits.

A. Fissure Veins.

Under the first heading fall the lodes immediately round Zeehan and others at Dundas. Some are apparently fault fissures, while others are more likely fissures of contraction in the volcanic rock.

They vary in thickness from mere threads to as much as 18 and 20 feet, being in the latter cases often split up by "horses" of the country rock. Their strike also varies, as is to be expected, as the lines of least resistance along which fissures extend do not always lie in the same direction. The most general strike is a little west of north, though it varies from N.W. to N.E. The dip is usually nearly vertical. Where they meet the contact of the black slate with the volcanic rock, they either follow along the contact or continue their course into the black slate, and in the latter case they usually become thinner and more irregular.

In some cases a lode, in passing from the volcanic rock into the slate, will thin out and disappear almost at once; in other cases it will spread out into various branches. In many instances the contact of the two rocks has formed the line of a more recent fault which has dislocated the lode to a greater or less extent.

The effect the volcanic rock apparently has on the mineral contents of the lodes is most striking. When occurring in the volcanic rock the galena lodes are almost invariably rich in silver, going in bulk from 80 to over 150 ounces to the ton. They do not change immediately on passing into the black slate, very rich silver contents being found in lodes in the black slate; but in such cases the volcanic rock is sure to be very close at hand, as at the No. 1 shaft of the Silver Queen Company. It has been noted that more zinc occurs with the ore in the volcanic rock than in the slate, that the galena is more compact and solid, and the lodes are less mullocky in the volcanic rock, but these may be merely local phenomena of no general bearing on the subject. However, one fact certainly remains that in that part of the field not penetrated by the rock the lodes have invariably proved poor in silver, and, therefore, in most cases not payable, whereas the occurrences of large bodies of high grade ore have always been associated with or in close proximity to this "grey country." This fact is, I think, worth recording as adding to the data already collected bearing on the vexed question of the genesis of ore deposits. As this subject is, however, beyond the scope of the present paper, it would be out of place to discuss it further.

As in one or two instances where good ore bodies had been worked in the upper levels of a mine, the lode, where struck at a deeper level, has proved barren, inducing work to be suspended, the opinion has been expressed that the lodes will not continue profitable in depth in the district.

Such a sweeping assertion is, to say the least, dangerous. In cases where a distinct change of the country rock occurs, as, for instance, if the lode passes from the slates into a conglomerate or limestone, a change in its ore-breaking character may be looked for, possibly for the worse, but as long as the country rock remains the same, and in the best part of the field, there is every reason to believe that it will continue unaltered to a considerable depth, there is no reason to expect a change in the ore-bearing character of the lodes beyond the usual irregularities, and a barren patch struck in the bottom level should, therefore, not discourage further exploration along the strike.

The lodes have no outcrop, and are discovered by trenching and costeaning. They generally have a gossan capping which extends to shallow depths, and varies somewhat in its nature. In some cases it consists of a red oxide of iron, more or less silicious, containing pyromorphite, cerussite, and canary ore. It is sometimes very rich in native silver and silver chloride, some parcels having bulked over 600 ounces per ton; but it is very erratic, and, as a rule, does not average more than 30 to 40 ounces per ton. In other cases the gossan consists almost entirely of a stiff, yellow clay, called kaolin ore, varying as the lode beneath it in silver contents. There is every gradation from the latter to the former case. Occasionally the decomposed capping of small fissure veins, a few inches thick, consists of broken fragments of the country rock in a slimy, brown, or black pug, with nodules and segregations of iron oxide, on which native silver has been deposited, sometimes in considerable quantities, bulk assays of several hundred-weights of such ore having gone over 3000 ounces per ton.

The chief matrix of the lodes at a depth beyond oxidation is siderite ($FeCO_3$), in which galena is disseminated in veins and bunches mixed chiefly with sphalerite, occasionally with quartz, iron, and copper pyrites, jamesonite, bournonite, fahlerz, and silver sulphide. In some cases the siderite is altogether absent, the lode then consisting of veins of galena and sphalerite in mullocky slate and country. At intermediate depths, between the oxidised and unaltered zones of the lodes, the more easily soluble siderate has occasionally been completely dissolved by percolating carbonic acid waters, leaving the galena suspended in fantastic shapes. At these levels, too, the galena is often very porous, and in such cases the occluded carbonic acid gas, liberated by workings being opened on the lode, makes the sinking of winzes impossible without artificial ventilation.

In the northern part of the field at North Dundas, some vein fillings are of quite a different character, as at the Owen Meredith, Madam Melba, and Fahl Ore Companies' claims. Here the matrix is highly silicious, and contains considerable quantities of mispickel; whereas siderite is almost entirely absent. These lodes contain less galena but more fahlerz, with native silver, the latter occurring in dendritic incrustations on the galena and quartz.

The valuable ore occurs mostly in irregular shoots in the veins, the length of which along the strike seldom exceeds 100 feet, though in the Western Mine it has in places been continuous for over 800 feet.

B. Irregular Deposits.

Under this heading must be classed the big lodes at Dundas, on which the Comet, Maestri, Central Dundas, Adelaide Proprietary, and Dundas P. A. Companies are or have been at work; also the Balstrup Manganese Hill lode, now owned by the Mount Zeehan S. M. Company at Zeehan.

These lodes are characterised by large bold outcrops of iron oxide more or less manganiferous. They are irregular deposits of considerable width, from 60 to over 200 feet, consisting essentially of very porous oxidised iron, intersected by large bars of dolomite. In this formation ore veins are found varying in thickness from a few inches to over 6 feet, striking generally about north-west to south-east, and containing sometimes pure galena, sometimes crocoisite, cerussite, galena, canary ore, and iron oxide with silver chloride. Occasionally, as in the Dundas P. A. property, these minerals are disseminated in the iron oxide of the deposit, bulking over a width of, perhaps, 20 to 30 feet, say 20 per cent. lead and 30 ounces silver. In the Maestri Mine a large body of ore was found near the surface, consisting of numerous veins of cerrusite, with galena and canary ore in the iron oxide, producing in three months 3073 tons net, which yielded 76,844 ounces silver and 836 tons of lead. This large body was found about 100 feet deeper to form into compact veins of galena.

Little is yet known of the true nature and extent of these deposits, as in most cases the workings in them have not reached the walls, although in the Adelaide Proprietary Company the drives have been extended for over 200 feet across the supposed strike. Owing to their great size oxidation has taken place to a much greater depth than in the fissure veins, and at the greatest depth so far attained—*i.e.*, 200 feet in the Adelaide Proprietary Company—its limit has not been reached, except where the ore veins occur in the dolomite, in which oxidation has apparently not penetrated to this depth.

There is one instance on the Zeehan field at the Grubbs Mine, where the lode occurs in dolomite, but whether this is the country rock, or itself a lode formation, cannot yet be determined with certainty.

The valuable minerals occurring in the lodes of Zeehan and Dundas are:—

Galena, PbS, more or less argentiferous, assays ranging from 10 to over 200 ounces per ton. It has, however, not yet been determined how much of the high assay value of some galena is due to silver in the composition of the galena, or, perhaps, to finely disseminated silver sulphide or other silver ores. The high loss of silver in crushing and washing the rich galena points to the latter supposition as probable.

Argentiferous Iron Pyrites.—In some cases the iron pyrites contain a considerable quantity of silver, as at the Western and Junction Mines, a sample of clean washed iron pyrites from the latter giving silver (0·448 per cent.), 146 ounces per ton.

Cerussite $PbCO_3$, *anglesite* $PbSO_4$, and *pyromorphite* $3(Pb_3P_2O_8)+PbCl_2$, occurring the first in abundance, the others in limited quantities in the gossans, and partially oxidised portions of the lodes.

Crocoisite, $PbCrO_4$, occurs sometimes in considerable quantity in the upper levels of the large irregular deposits of Dundas, where the serpentine forms one wall of the deposit.

Native silver is found in fine grains in the gossans associated with *chloride of silver*.

Fahlerz, $4Cu_2S,Sb_2S_3$, and *bournonite* $(PbS)_2Sb_2S_3+(Cu_2S)_2Sb_2S_3$, are found associated with the galena sometimes in appreciable quantities.

Jamesonite, $2PbS,Sb_2S_3$, is also found associated with galena, and often quite pure in distinct veins. It is a strange fact that whereas this ore, as well as bournonite, contains little silver in itself, assays of the pure ore having given—

Jamesonite, 21 and 25 ounces per ton;
Bournonite, 35 ounces per ton;

yet when associated with galena the richness of the ore is enhanced so generally that the occurrence of these minerals is universally considered by the miners a favourable indication for a high silver assay. They have hence been cited here as valuable minerals, though their antimony contents are deleterious.

* A paper read before a meeting of the Institution of Mining and Metallurgy November 20.

Canary ore, so called by local miners, is probably a decomposition product. It is a powdery mineral of a canary yellow colour, and has no fixed composition, containing varying quantities of lead, antimony, arsenic, iron, and silver. It occurs in the gossan and partially oxidised zones of the lodes.

Susannite, probably a variety of *Leadhillite*, $4PbO \cdot SO_2 \cdot 2CO_2 \cdot H_2O$. This rare mineral has been found in some quantity associated with a large body of iron pyrites on the Britannia Company's section in the west of the field.

Deleterious Minerals:—

Sphalerite, ZnS. This is almost invariably associated with the galena in greater or lesser quantities, sometimes finely disseminated in it, sometimes in distinct veins in the lodes. It usually contains small quantities of silver, say from 2 to 5 ounces per ton, but is a most undesirable ingredient, and anything over 7 per cent. of zinc seriously affects the price paid for an ore by the buyers.

Antimony, in the shape of jamesonite or bournonite, already described, is objectionable if occurring in any quantity.

Tin, the most objectionable ingredient of a lead ore, and, fortunately, rarely found, occurs in small quantities, associated with pyrites in one or two lodes on the Silver Queen property, possibly as a sulphide being soluble in acids. Parcels offered for sale have contained up to 0·75 per cent.

Arsenic in mispickel, canary ore or fahlerz, is objectionable, but rarely occurs in any quantity.

The Mining Industry.

The lodes are worked through shafts, adits seldom giving more than 50 feet of backs. The greatest depth so far gained is 400 feet at the Western Mine.

Timbering.—Close timbering is generally necessary, especially in the slates. The shaft at the Zeehan Montana Mine will serve as a good example of shaft timbering.

Here the sets are 5 feet apart, timbers 8 inches by 10 inches, the measurement in the clear 14 feet by 5 feet 6 inches, close boarded between the sets, strong horned sets every 100 feet, the cost being £57 per 100 feet.

Pumping.—Good pumping machinery is always necessary, as the water line is soon reached, and the water is heavy, even in the small lodes. At the Western Mine a double barrel Cornish pump, each barrel 9 inches diameter, is keeping the water under easily at 400 feet, and is expected to take them down to 800 feet.

In the large deposits of Dundas the water is much heavier, and at the Comet Mine, where they are now sinking to 200 feet below the adit, a 24 inch single barrel Cornish pump is now used. In these deposits the water has given endless trouble, through inadequate pumping machinery being at first supplied. In many cases steam pumps of the Worthington pattern were at first used, but though they doubtless work well with clear water, they were found to be subject to constant breakages with muddy water, besides being very wasteful in steam, and hence fuel, and have now universally been replaced by Cornish pumps.

The Ore.—This is all either sold direct for cash to local buyers, usually by tender to the highest bidder, or shipped direct to Europe. Owing to keen competition, the mines have a very good market for their ore, and, if they sell on the spot, have the advantage of receiving cash as soon as the ore leaves the mine without any further trouble.

The ore is prepared either for local sale, or for exportation, first of all by being hand-picked, to bring the contents up to from 50 to 70 per cent. of lead. This is called first-class ore, and is bagged in jute bags containing about 1 cwt. each, ready for export, or to be weighed, sampled, and tendered for locally.

The so-called second-class ore that remains after hand-picking is variously treated, according to the means available. At the more important mines, concentrating mills of various patterns have been erected. At the smaller claims worked by tributors, the ore is hand-jigged and sluiced, or sometimes, if containing as much as from 25 to 30 per cent. lead, and over 40 ounces of silver, is bagged and sold direct as second-class ore.

Concentrating Mills.—Up to the present, seven of these have been erected on the field, four of which are still at work. Unfortunately, in most cases, want of capital has induced the mines to erect cheap plants, both unsuitable in design and quite incomplete, which are now, where still at work, losing more than would have paid for an efficient plant to begin with. The most complete plant on the field is one built by the Luhrig Company, at the Western Mine, where the ore is crushed step by step, never finer than necessary to separate the galena from the gangue, being thoroughly sized before jigging at each stage. The slimes formed, which are thus a minimum, are also thoroughly classified before concentration on Luhrig vanners.

At the New Tasmanian and Mount Zeehan Companies, plants by Green, of England have been erected. These use buddles instead of vanners, but their classification is very imperfect; much galena is crushed finer than necessary; more slimes are formed, and greater loss necessarily results. The same applies to the concentrating mill built by Messrs. Parke and Lacy for the Silver King Mine, which uses Frue vanners for the slimes.

The plants built by Messrs. May Brothers, of Adelaide, for the Launceston, Mount Zeehan, and Silver Queen Companies have practically no sizing at all before jigging, and have no appliances for saving the slimes, of which they make an undue quantity, owing to too fine initial crushing. They are simply steam-jigging machines, and it is no exaggeration to say that they lose from 30 to 50 per cent. of the gross contents of the ore delivered to them.

At Grubbs Mine another plant of this description has been slightly improved upon, and has had Frue vanners added to it for the slimes. It is, however, still far from efficient, and must work with a heavy loss.

(To be Continued.)

A NEW ROUTE TO EGYPT, VIA OSTEND, VIENNA, AND TRIESTE.—The International Sleeping Car and European Express Trains Company, 14, Cockspur-street, S.W., begs to announce the organisation of a new weekly service *de luxe* from London, *via* Ostend and Vienna to Trieste for Alexandria. The train will be composed exclusively of sleeping and dining cars and through baggage vans, and will run through from Ostend to Trieste without change. At that port it will connect with one of the large and well-appointed steamers of the Austrian-Lloyd Company. The service will leave London every Sunday at 10 a.m., Trieste every Tuesday, and will arrive at Alexandria every Saturday at 4 p.m. On the return journey the steamer will leave Alexandria every Saturday at 9 a.m. The train *de luxe* will leave Trieste every Wednesday on arrival of the steamer, and will arrive in Ostend and London every Friday. The first departure from London will be on Sunday, December 1, and from Alexandria on Saturday, November 30.

THE GERMAN IRON INDUSTRY. — According to the monthly returns published by the Association of German Iron and Steel Makers, the output of pig iron in the German Empire, including Luxemburg, during the month of October, has amounted to 511,264 tons against 490,934 tons in October, 1894. The output is made up of 113,967 tons puddling pigs and spiegeleisen, 38,494 tons Bessemer pigs, 267,247 tons of Thomas pigs, and 91,556 tons of foundry pigs. The total production during the ten months from beginning of January to end of October amounts to 4,788,571 tons, against 4,579,180 tons during the same period of last year, an increase of 209,301 tons.

THE GOLD DEPOSITS OF THE PYRENEES.

By JUAN MACVEIGH.

PART I.

GOLD has a peculiar and marvellous inherent attraction, in addition to its radiating energy. Having been so diligently songht after in every age, for sacred and profane uses, it is truly surprising how very scanty reliable information we have about its origin, substance, formation, and place of abode. It has been availed of for enquiry into every other subject more successfully than about its own base origin. In this respect it is a "noble" metal, of highly aristocratic, mercantile, and scholastic attainments, although of very humble birth. Never, throughout its important history, has it been called upon for more radical changes of social power than at present, and it seems in the near future to become the great civilising element of colonisation, more effective than the sword's edge, if the construction of railways continue to yield it obedience. Already it is the modern passport, without which nobody can safely travel abroad: and at home it is the social registrar of the local virtues, and "Amen" of the High Church sermon. Its forthcoming importance so exceeds that of the "almighty dollar," that it is to be hoped the geologists will tell their Governments all that is required to be known about it.

Considering the general need of it, and the great good it may be fairly or falsely accused of, as well as the many mistaken notions about its hiding places, it is high time that some steps should be taken to settle the questions in vogue about the auriferous deposits of the Cosmos, upon which the national progress depends. Colonists should be plainly told this, to prevent useless search in vain, till the stumbling upon it accidentally or through pure ignorance.

It is a great pity that geologists do not clearly guide people to its place of abode. They are not a little blameable for their obstinacy and silence in this respect, because they cannot pretend that they do not know where to find it; and, knowing as they do, they are all the more guilty of keeping the public and their own favourite students in dangerous ignorance Knowing where it exists in greatest quantity of finest quality, it is scarcely fair they should be keeping such an important secret so long concealed, at least from the British Association, as to be bringing it into very great disrespect and discredit for its useslessness in the hour of need. How is it that the British Association cannot prevail upon its eminent sages, and scientific martyrs or philanthropists to disclose the necessary information about this precious metal, and why not? Have Murchison, Tyndal, and Huxley taken with them the secret from science, or is there nothing more to be known from their schools than what is to be found in "Siluria," the "Alps" or Huxleyisms? That there is, who will tell us? or are we to be dependent upon the ignorance of the "dark continent" for our civilising enlightenment. The geologists should save us from this shameful disgrace by telling us plainly what gold is, and where it is to be found in the best easy conditions of special richness. If geology cannot do this, then what can it do that the most ignorant cannot do? How far can it aid us in the search for it, if telling us no more than it learns from ourselves; like the family doctor who simply reverses or explains, and cures the disease by the prescription being in Latin or Greek.

The want of gold is a fearful social disease, and so very contageous that some effectual remedy is indispensable. The contagion is so fast spreading to all large cities as to demand serious attention. The colonies are already suffering all kinds of hardships and privations because of its effects. The distemper having got out of the hands of the medical remedies, how does geology pretend to remedy the evils its teachings have produced, for it is accountable for many of the grave questions it raised? How shall it settle them? How decide the most simple questions among the auriferous miners about the solid rock, the sedimentary deposits, alluvials, deluvials, and conglomerates? Which of them contains most fine gold able to cure the social epidemic? If the "primary" rock be the origin of its formation or abode, what kind of rock is the "primary?" We know, of course, that it must have been the first originally; but where is it to be found now? and does it still contain the primary gold? or was the gold an original primary? and, if not so, when and how did it begin at first to exist, and what is its radical necessity of origin, if not of "primitive" or anti-primitive origin? Or was it always, from its infancy and throughout its natural growth, the same kind of substance as Solomon knew it to be, and as our auriferous miners find it now to be? Did it originate in the same places or in the same kind of rocks as in modern epochs; and, if not, why did any change, and what change, come over it? If the "primary" rock be its primary place of abode, how did it get into the secondary and successive series of existence; and is it wholly or only very partially therein? If wholly eliminated from its old dwelling-place, how could such an extraordinary fact occur? And if of subsequent formation during the great geological periods of effects without causes, owing to the absenteeism of the great first cause, in search of which Tyndal has gone into the unknown, followed by Huxley, may not the auriferous elements of formation have permeated the old rocks fractured into fissures, as the flora is said to do in the coal formation? And if there be an equal probability of equal similarity, may not the logical conclusions be similar? That inference, however, would give us the existence of the gold, not only in the same carboniferous system, but in the very same veins through which the flora has entered into its composition; and still further, for it would exist conjointly, or as a part integral of the coal so formed, from the impregnated flora. In further evidence of this we have the practical fact, fully demonstrated through all Nature, that gold takes to rather than repels or runs away from the vegetable matter. That this is so, one has only to put a cork, or any piece of vegetable matter, in water where gold is floating, and it will go to it. Since there is no repugnance between them, but rather a strong adherent affinity, how does geology know with such dogmatic certainty that gold does not or may not exist in the carboniferous system so full of flora? and if the gold as a fact exists in iron pyrites, and that iron pyrites also exist in the coal beds, indispensably forming a part, a conjoint part of same, how does it logically happen that no gold may be expected in such rocks as of necessity contain the natural elements of which the secondary rocks form gold? That is, in case of gold being of secondary formation rather than of the primary hypogenic rocks. Presuming, again, that the secondary rocks are merely composed of the wasted primaries by exterior action, and that those designated carboniferous are simply no more nor less than such wasted mixtures of primary conglomerates—having no claim of a special independent creation—how does the gold originate in this second series or section, if not in the first, and if permeating the first throughout, why not also equally so in the second?

Why does geology prescribe an exclusion of the one section, to wholly admit the other? This is not fair, unless it have stronger arguments than it has been imposing upon Geognosy, to keep it from a chance of disclosing the stupendous blunders it has been making upon practical progress in the discovery of gold. If gold originate in pyrites or native iron ore, acted upon by hydrated carbonic influence, and that the same be the most disseminated of all the mineral elementary inclusions of the Cosmos, and that it be a fact that the gold flakes are similarly universal, how does it happen to be confined to quartz alone? And if in quartz only existing, how is it found in other rocks in which it has no permission from geology to reside, even temporarily, because of the prescribed exclusion? Or how has it managed to emigrate from the quartz, without the cognisance of the auriferous guardian of Nature's enactments into other rocks; and if geology know of this, why hide it?

Let us not be too hasty in accusing geology of any want of neglect, because the transposition period gave it enough to do, with the other more important events of the age in which the gold flakes were made universally free, by the upheaval of the granite, from the deep fiery ocean making for the glacial system, to get a cool refreshment of icy beverage. So many great events were than unrecorded, that geology may be fairly excused for not having booked all the historical originalities of the gold, seeing the art of printing was not then a literary agent of the records. For all that we now know of that period the granite in its igneous upheaval may have so dried the burned scales of pyrites, previously boiled in the lake of brimstone and of fire in the bowels of the earth into the most minute molecules and atoms, and these, dispersed by the winds and currents throughout the atmosphere, may have fallen upon the crust of the earth and its liquid streams, making their way to where afterwards found.

Whether we recognise the peculiar inherent attraction of the quartz for the gold, when invested with the mica of the granite, or regard their radiating energies of approach and adhesion, we are unable thereby to know as yet whether other rocks may not have stronger affinities for the gold, existing under another form or "colour," from the fact of recently making the acquaintance of "black-gold" to be the very finest quality of same existing as an ore.

Up to this we gain so little information from geology, about the auriferous inclusions, that we must, I fear, continue to inquire outside of its restrictions for the gold deposits, and get rid of our school tasks and prejudices about the rocks. The geologists, while making the way narrow enough for their students, gave themselves a very wide longitude and latitude. Miller inhabited his red sandstone with fish, or the scales of the same, and for himself the red sandstone did not require to be red, nor did it require to be sandstone either in order to be the famous "red sandstone" upon which geology is made to depend for coal, in the same way as gold must depend upon the second section or secondary formation since the extinction of the first section.

Up to this, the whole attention has been paid to the quartz, as it also has been to the yellow colour of the gold, which may exist far more abundantly in the choritac—green, sulphuric pale, copper red, carbonic black, or graphitic "spot," or some other chemical "button." The great secondary formation had so many constitutional elements that chemistry may very soon give us a great surprise respecting gold, should it once venture to the reversed order which the doctrine of invention and discovery is inculcating successfully.

But does gold not exist in any or all of the other rocks, which, while excluded from geological place, are an integral part of the second or secondary formation? If geology were once to settle the "primary" question we could then know more upon the secondary, by which practical men evade obedience to the teachers, and ramble throughout all kinds of rocks in the search for gold. From the granitic formations, there is an advancement towards the Trias for tin and such other ores as were hitherto excluded from any but the granite, as it encourages others into that section to see the pupil of Murchison, Ramsay, and Page before them therein, finding 70 per cent. of tin to exist. May not gold similarly reside? And if resident in the Trias, whether in the sandstone, the slate, or the limestone of same? If equally probable in each, or in which, and why so? and if in limestone, what does geology say? What penalty inflict on practice? Shall it further punish us by keeping up the suspense of secrecy respecting all we should know from its teachings?

The distance between these two systems is filled up by the extensive conglomerates, some of which deposits have paying gold, while others are vacant; and why is this? Simply because of the nature of the intermixed quartz of same, for there is vacant quartz also; and although gold may be found adhering to the pebbles, it does not of origin belong to them, when and where not found within them intrinsically; for while outside of them, it is an outsider and not an integral part.

Origin gives an inside inclusive right in addition to exterior characters, and gold partakes of this inherent right of affinity, when in contact with ferric-silicates, to which it will adhere naturally. People write and speak about "quartz" as if the word represented but one definite idea, instead of the many variations of the silicates which the word practically comprehends, and hence so little knowledge of auriferous deposits is conveyed by the word "quartz." When people read about "lodes" and "veins" of quartz being discovered in mining districts, gold is the natural conclusion of those who "read and run." Quartz, however, may exist, and in tempting conditions, and yet have not only no gold, but be "vacant" of any kind of ore. There is one kind, and one kind only, of confidential reliance, and that is ferric-silicate quartz. This pure kind of native quartz is never without gold, if acted upon by sulphur and saline percolating solutions in igneous rocks. This is the richest kind of auriferous quartz, and the others are rich or poor comparatively therewith, as I will show more explicity in another paper specially relating to the "quartz" so universally accused of originating the gold, and I propose to treat of the subject in an easy and clear practical way, suggested to me by Nature's book, laid open for examination while prospecting on the Pyrenees, where immense masses of "vacant" quartz for many years annoyed me, till a strange incident gave me an insight into the cause of it.

Up to the present, geology gives us no definite guidance to the gold deposits beyond the stories it repeats, upon the hearsay of prospecting unscientific finders. It seems to do no more than raise questions, and when asked to solve them, runs to something else to engage attention. This way of showing its great learning has raised the question of the conglomerates to get rid of the auriferous primaries. Fully aware of the great avidity capitalists have for immediate returns, and fear of the primary cost of working in the solid auriferous rocks, naturally hard, the conglomerates were to be ground in enormous masses, in order to gain a small quantity of gold. Fortunately the cyanide process came practically to save the shareholders from the speculative theories; and out of an evil has resulted a good, unless a still greater evil may result from the conglomerates.

If the conglomerates are rich enough for a certain return of capital, the much superior auriferous quartz may be neglected, and simply because of no due regard being paid to the difference between the truly rich auriferous and the vacant quartz. Of course, there must exist a still greater probability of disappointment between the vacant and auriferous conglomerates, but the united interest in laying down expensive machinery extensively will float the conglomerates, whether vacant or not vacant, although rich rock mines cannot be worked; and this would be

a great evil, because it would draw capital away from the superior quartz to its inferior degradations, mixed with others possessing no gold whatever. To prevent that dreadful consequence on a gambling market, so ready at any moment for disastrous panic, the British Association should be fit for the occasion, instead of being deaf and dumb in the hour of need after its sunshine excursions.

From the best geological reports of Africa, checked by responsibility, we can discover nothing more promising than "chutes," the plain English of which is small, narrow veins of quartz, or slender "stringers" or threads shot up through the rocks otherwise vacant. To work in such rocks upon these thin veins, deep shafts must be sunk to reach the auriferous lodes. This being the condition of things throughout Africa and Australia, most likely the conglomerates will give the best dividends, till some other gold fields of solid ferric-silicate quartz be opened up, and then comes the conglomerate disaster; for, Paris, Berlin, and Vienna selling out will throw all the responsibility upon the British bondholders of their own colony bonds. The only way to avert this at present is to exercise extreme prudence: otherwise, later on, the only assets for investors shall be parks of machinery and enormous heaps of vacant conglomerates to grind, &c.

In the excellent paper read by Mr. Kuntz, at the special geological meeting of South Africa, upon that serious question, "The Rand Conglomerates," the richest known deposits, he plainly tells them "the gold is not an original element of the conglomerates," and in the studious examination of the rocks of the zone, he does not discover their proximate dependence, nor upon any but a remote aqueous source--the Deluge. While the results are profitable, no apprehension can arise from this reliable opinion, but upon the least reversion the fact is not an encouraging one for those who depend upon either the conglomerates or the slender "chutes" of quartz exisiting for deep shafts—as it may also become more generally known that such narrow veins are always rich enough to give gold of high analysis for company formation.

There is such a very wide space between the gold quartz and the vacant and mixed rocks which make up the conglomerates, that there is a far less risk, if not a much greater certainty, of much better returns in the solid rock, which is more regularly impregnated with the auriferous inclusions of the gold formation. The conglomerates, however, has such temporary advantages and disadvantages as to be kept in public agitation, and to raise, sustain, and carry inquiry through the struggles of opinion and the Press into unsound decisions.

Presuming that the quartz is the origin of the gold's substance, and that it forms but thin shooting veins into an enormous mass of other kinds of rocks, having no gold claim, what hopes can result from the conglomerates derived from the wastings of same? Presuming, also, that they are dependent upon the remote cause—the Deluge—and having no contiguous elementary auriferous formation, where is the reliance? Is it not an unknown independent issue? and from which must arise surprising results of *pro* and *contra*—at least, from time to time, causing panics and gambling. Proceeding with the blind infatuation of a Deluge supply of auriferous conglomerates, it will be no remedy to refer their origin later on to either the vacant quartz or the absent quartz. Neither will it long stand as a dodo, to insinuate that the gold material comes by migration from other regions to complete its formation there *in situ*. The geologists of South Africa, by this imposture, will create a fearful state of affairs if prudence be not exercised.

No doubt the doctrine of auriferous migration has universal evidence of time and space. But if we recognise the auriferous lakes to be impregnating the solid rocks, we have a much stronger evidence of immigration into the solid than of emigration to the loose and inert masses, and we are bound to accuse the solid rocks of the gold formation and deposits.

The theories applicable to the sedimentary deposits of South Africa could not be applied to the Pyrenees, where the gold value is rather to be considered from the immediate than remote cause of existence, and as the search for gold is bound soon to reach the Pyrenees, no doubt facts as to the deposits of gold there will be interesting.

(*To be Continued.*)

MINING NOTES FROM JOHANNESBURG.

By H. BUSH, M.E.

PLEIADES MINE.

There is not the slightest truth in the rumour that a reef has been struck in this mine, and the prospects are more gloomy than ever. These shares are valueless except for liquidation values.

STEYN ESTATE.

The Chairman candidly admitted that the mine does not look very promising, but, as an estate company, the shares are good value at 60s., and there will be a big rise within a few months.

MOODIE'S FORTUNA.

£50,000 has been sunk on this property without return. It consists of 10 claims on Brommers. It has been decided to add another six claims. Four reefs have been opened up 7 feet wide, milling 1 ounce. On October 27 the stone averaged 2 ounces. There are rich shoots all along the line, 20 claims to the eastward, in the hands of a syndicate, which it is proposed to purchase for £15,000. The reefs are well-defined quartz; those to the south pan 4 ounces. Milling will be started next month. The capital of the new company is to be £150,000 with 10,000 shares in reserve. It will consist in all of 86 claims, capitalised at £125,000, or (say) £1500 per claim. The proposition was carried here last week in spite of the protests of London shareholders.

REDUCED RAILWAY RATES FOR FRENCH COAL.—The Railways Advisory Committee has discussed at considerable length the tariff proposed by the Western and Northern companies, with the object of facilitating the transport in the West of France of coals from mines in the northern districts. M. Bousquet reported in favour of the suggested scheme, and dwelt on the necessity of gradually freeing the French market from its dependency upon English coal by opening up, as far as possible, the means of communication with the centres of consumption, and thereby assisting the native product. The committee expressed their approval of the proposal before them, but decided that the tariff should be calculated from the pit's mouth, and not from the frontier, so that the Belgian coal imported into France should not benefit by the reduction in the present rates. The Minister of Public Affairs then intimated his acceptance of the favourable view taken by the committee of the new arrangement.

THE SAGYIN RUBY MINES.—It has been notified in the Burma *Official Gazette* that tenders are invited for the lease for five years of the Sagyin Ruby Mines, covering an area of 500 acres in the Mandalay district. The area has been declared a stone tract, and no one except the lessees will be allowed to dig for, or raise, precious stones. The venture is, no doubt, precarious, and will hardly be worth any large outlay, although it is affirmed that rubies have been found in that neighbourhood.

REPORTS FROM THE MINES.

COLONIAL, INDIAN, AND FOREIGN.

ALAMILLOS.—Mine report dated November 20: The 40 fathom level driving east of Santa Agueda's shaft has been holed to Andre's winze, and the men are now driving on the course of a valuable lode, estimated at 3 tons per fathom. The ground in the 70 fathom crosscut north of San Felipe's shaft is easy for driving through. In the 85 fathom level west of Taylor's engine shaft the lode is small and poor. The lode in the 160 west of the same shaft produces stones of lead, but not enough to value. In the 100 east of Judd's engine shaft the lode is well defined, and is valued at 1 ton per fathom. Sanz winze sinking below the 60 fathom level, the lode is valued at ½ ton per fathom.

BROWN HILL EXTENDED.—Under date of October 22, the business manager at Coolgardie writes: Mr. Johns, the recently appointed manager of the mine, proceeded from here for the mine on Saturday last, with the necessary materials and staff of men, and we trust to be able to forward you full report, with plans, in the course of a mail or so.

BAYLEY'S NO. 2 SOUTH.—Report from manager dated October 22: I have to report for the past fortnight that at No 2 shaft the level (northward at 100 feet deep) has been advanced 10 feet, making a total distance from the crosscut of 76 feet. The reef has improved in width, and is now 14 inches wide, with a value of 3 ounces of gold per ton. At No. 1 shaft (47 feet deep) we have commenced to re-sink, and find the reef has widened out from 2 feet to 4 feet, worth about 22 dwts. per ton. At No. 6 shaft a further distance of 10 feet has been sunk, making a total depth of 132 feet. The radical change spoken of in my letter of September 17 as being probably about to occur in this shaft has taken place, the reef being completely pinched out, and the first water seen on the company's property has made its appearance. There is about 18 inches in the bottom of the shaft. As this shaft is small and crooked it will be impossible to deal with the water encountered in further sinking. I have, therefore, suspended operations and placed the men on No. 5 shaft, which is vertical and larger, and will serve for the purpose of a water shaft, which No. 6 would not.

BAYLEY'S REWARD CLAIM.—Mining report, dated Coolgardie, October 5:—Report of work done for week ending October 4, Sylvester shaft. No. 5 level south drive driven for week 10 feet: much the same appearance in face except the walls have widened more, now 3 feet between them, a little iron pyrites showing, but carries no gold. Total distance from crosscut 214 feet. North drive extended 8 feet taking only half the reef along with us; no change in quartz since last report, and no gold visible.—Sylvester shaft. Stope back of 100 feet level (No. 4) south not looking well, stone of low quality. Stope 100 feet level south (but north of above-mentioned) looking extremely well, and the stone is being trucked direct for crushing, assay about 15 dwts. per ton.—Gordon shaft. No work being done in these stopes at present.—Begelhole shaft, north drive 35 feet level. Face looking extremely well and during the week have had some nice patches of gold. This make of stone looks like continuing further north than any drive up to the present in this block of stone. Reef averages about 7 feet to 8 feet in width.—Everard's air shaft, No. 5 stope. Lode about 2 feet wide, and carrying good payable stone.—No 6 stope. Have discontinued work here for the present and have the men engaged mullocking up and timbering, &c. Shall be sinking air shaft again this coming week to enable us to stope more ground.—Machinery. All machinery, battery, winders, &c., running smoothly and well.—(Signed) Tom V. Browne, acting manager.

BAYLEY'S REWARD NO. 1 SOUTH.—Mining report, dated Coolgardie, October 4:—Report of work and development for week ending October 4. 120 feet level north drive. Driven for week 8 feet. The ground is now much harder and more settled, the reef apparently taking its right course, average width 2 feet, gold seen occasionally during breaking of stone, total length of drive from crosscut 39 feet. Stopes south from crosscut towards main shaft looking well, though as the level above (90 feet) is approached the reef narrows considerably.—Stopes north of crosscut. We will commence stoping here this coming week, and expect the stone to be of high quality.—Winze north of shaft (120 feet). Sunk on west side of reef opposite of crosscut, sunk for week 6 feet; so far we have not cut into the stone to any extent.—170 feet level. No work done here for week.—90 feet level. No work done here for week.—Battery. Crushed for week 35 tons; we clean up next week, plates looking well,—Public crushing. We have had five stamps going continually on Star of Coolgardie stone.—(Signed) Tom V. Browne, acting manager.

CENTRAL CHILI (Panulcillo).—The directors have received the following from their manager at Panulcillo by cable:—Result of work for the month of October:—Mines produced 1700 tons; ores bought, 1100 tons; ores smelted, 2150 tons; regulus produced, 306 tons; net profit for the month, £1550.

FOREST KING OF COOLGARDIE.—The latest advices from the manager are as follows:—I am pleased to state that the developments in the mine are daily improving, and at present I have not the slightest doubt that we can keep 30 head of stamps going. Main shaft sunk 7 feet for week, total 133 feet from brace. Country still unchanged. Shaft timbered 20 feet for week. Middle underlay shaft sunk 3 feet for week, total 129 feet from surface. Reef well defined, showing good gold, and at present 6 feet wide.—(Signed) Charles C. Rawson, secretary.

FORTUNA.—Mine report dated November 20: Canada Incosa Mine. In the 110 fathoms level driving west of San Pedro's shaft the lode is regular and compact, valued at ½ ton per fathom.—Los Salidos Mine. The lode in the 212 east of Taylor's engine shaft is small and of no value. Good progress is being made in driving with the rock drills. In the 200 east of the same shaft the lode contains spots of ore, but not sufficient to value. The lode in the 92 west of Palgrave's shaft is small and poor.—Julian's winze below the 200 fathoms level. The men are making good progress in sinking, and will reach the required depth by the end of the month.

KINSELLA GOLD MINES.—Mine report for fortnight ending October 17: Referring to your paragraph re my cable dated September 6, the payable ore I estimate 450 feet in length by an average thickness of 3½ feet (or from 3 to 6 feet thick), and equal to about 1 ounce per ton. There are surface and other indications of a much greater length of ore by extending the drives; this is a work of the future, and will be determined by the result of present appliances, or increase the capital and push on the mine development vigorously.—Foreman's report. I have the honour to report that most of our underground work has been confined to the main shaft at the 100 feet level in the south crosscut. The lode was broken into, which proved to be about only 15 inches thick, and I am sorry to say, almost barren of gold. Out of four small samples crushed, I only obtained a few fine colours of gold in one. On Wednesday, the 9th, two men were started to drive south on lode, and on Monday, the 14th, four more men were put into this drive, and for the 17th shifts have driven 23 feet from crosscut, but without any improvement in size or quality of the lode. The stone has a very nice gold-bearing appearance, and I hope to be able to report better results from this drive at the end of coming fortnight. It was thought advisable to clear out the crosscut north of main shaft, and drive to the lode. This was done, and on Monday the 7th, a start was made to carry on the crosscut; 39 feet has been driven, and the lode cut last night. We have just reached the western wall this evening. The lode is a fine strong body of stone 4½ feet thick, but as I have not had time to test it, I cannot say what its value may be. Two men have been put on to cut a winze plat, and get ready to sink a winze at No. 1 north shaft. In cutting down the mullock on headwall side of lode, a body of stone was uncovered about 18 inches thick. I have tested two lots of drillings, and judging from results, value the stone at about ½ ounce to the ton. The stone is of a very dark ironstained appearance, quite different from the main lode.—Note. About 260 feet north of this point a body of stone leaves the main reef, and bears a little to the east, and I am inclined to think this is the same slab of stone, and I think it would be wise at some future date to crosscut between these two points. I would suggest that during the next fortnight one or two winzes be got underweigh south of main shaft. All the surface work is being pushed on with all possible speed, and before the end of the month the battery will be under steam. The water in main shaft has increased a good deal during the fortnight. For the first three shifts of this fortnight we bailed 159 tanks, amounting to 31,800 gallons, or 1325 gallons per hour; for the last three shifts of this fortnight 420 tanks, amounting to 84,200 gallons, or 3508 gallons per hour for the fortnight; all told 3185 tanks have been bailed, 440 trucks of mullock, and 40 trucks of stone; 27 trucks of stone have been tipped into battery hopper.

LADY LOCH.—The manager, under date October 19, reports as follows:—Lady Loch: Main shaft. Sunk 175 feet from brace. Country unchanged, and water slightly increasing, but as yet of no importance.—Prospecting shaft. Crosscut south extended 4 feet, total 6 feet from shaft. Country becoming a little softer; water increasing. Expect to cut reef during the next 6 feet.—100 feet level. East drive extended 4 feet, total 133 feet from shaft, exposing 2 feet of payable stone. The mine is continuing to look well.—Lady Forrest North. Middle underlay shaft sunk 6 feet for week, total 104 feet from brace, exposing two small leaders, one on the foot, and one on the hanging-wall. Have started main shaft about 40 yards north of southern boundary. Have sunk 8 feet for week, logged up and fixed windlass, and have called for tenders for sinking a further 100 feet. I have no doubt whatever that as soon as sufficient depth is attained the Lady Forrest reef will be struck.—(Signed) Charles C. Rawson, secretary.

MAINLAND CONSOLS. — The following cables have been received from Mr. Charles Kaufman, the consulting engineer, viz.:—The machinery for the erection of 10 stamp mill, with sufficient power to drive 20 stamps, has been received on the ground, and is in course of erection. Upon completion, the additional 10 stamps will be erected as soon as possible. Cannot yet fix time for completion, owing to the scarcity of skilled labour. The resident manager reports having struck rich ore in Last Chance lease, shaft 10; exceedingly rich in gold, estimated to yield 3000 ounces per ton.—Official Note. This find is a new development, and is distinct from the rich chute discovered in the Mainland lease in August last. It should be pointed out that ore of such extraordinary richness can only occur in pockets, and the extent can only be ascertained by development.

MOUNT LYELL.—Mine manager's report for week ending October 10: Main crosscut. No 3 tunnel. Only three days' work has been done this week. Distance driven 18 inches, total since resuming work 9 feet 6 inches, and total length from the footwall of the pyrites 296 feet 6 inches. There is no change to note.—South drive, No. 3 tunnel. 6 feet have been driven, total 469 feet. The pyrites are of good grade and are breaking better.—Main crosscut No. 4 tunnel. 5 feet have been driven, total since resuming crosscutting 20 feet, and total from footwall of pyrites 112 feet. There is no change. Face still in solid pyrites.—North drive, No. 4 tunnel. 6 feet have been driven, total 221 feet. The main pyrites wall has broken away to the west.—South drive, No. 4 tunnel. 7 feet have been driven, making the total length 376 feet. Country, schist.—No. 5 tunnel. 4 feet have been driven, making the total length 1117 feet. The last 17 feet in solid pyrites.—South drive, No. 5 tunnel. 4 feet have been driven, total 8 feet. Country schist.—North drive, No. 5 tunnel. 3 feet have been driven alongside the wall. Country schist showing mineral.—Progress report for week ending October 11: Smelter building. Reef trusses and superstructure over bins and blast furnace department in progress, also trestles of bin approaches framing. Continuation of main flue to hill flue in progress. Stone foundations of hot blast stoves finished, bricklayers at work on brick foundations and culverts. Pedestal of main chimney nearing completion. New machinery storage shed nearly completed. Platelaying on new kiln siding. Entire construction plant running smoothly, but outdoor work greatly hampered by severe stormy weather. The portion of the line embraced by contract No. 23 has been completed, passed by the Government, and taken over by the company. Manager advises that in extending the No. 5 tunnel cut band of schist, in which tunnel is now being extended.

NO. 7 NORTH-EAST QUEEN.—The following fortnightly report has been received from the mine, dated Charters Towers, October 11: I brought in 17 ounces 13 dwts. 6 grains of smelted gold, being the results of a crushing of 20 tons 10 cwts. put through by Balks and party. They are at present stoping on a reef that will average 15 inches in thickness. The above party will in future be known as Wilkinson and party, as Mr. Balks has left. On the 9th instant Balch and party cleaned up a crushing of 27 tons for 63 ounces 8 dwts. 21 grains of smelted gold. On the 10th instant Wherry and party cleaned up 16 tons 15 cwts. for 9 ounces 16 dwts. 3 grains of smelted gold. Hamilton and party have but little stone showing at the present time, the reef being broken up and become intermixed through the formation. Jordan and party in No. 4 level east have about 8 inches of heavy mineral stone, and about 20 to 24 inches of poor stone in the face just now. We have hauled about 31 tons of stone from the different parties this fortnight.—(Signed) John T. L. Williams.

NEW LONDON ESTATES.—Extract from manager's report, dated November 11: Shaft. I have had but one pare of men at work here during the past week sinking, the shaft being now down a distance of 131 feet from the collar. The quartz veins in the bottom remain much the same as heretofore reported, except that the value in assaying has dropped somewhat, one test made giving but $3·50 a ton. I do not, however, place much reliance upon this test, and have decided to have checks made upon results obtained, and have sent samples of the vein crushed to the Charlotte Mint for assay.—Crosscut. We have driven 6 feet during the past week, making the total distance from the shaft 45 feet. The water here is very much stronger, which is a sure indication that we are very near the belt of veins, and I trust ere long to have good news to report to you with regard to the same.

NEW ARISTON.—The London secretary has been advised that the profit on working at the mine for September was £680. Latest advices from the manager stated that it would be necessary to stop crushing at the end of October for about eight days in order to make some repairs to the mill. This it is expected will reduce the profit considerably for November. Mr. J. W. H. Stubbs, the manager, in reporting on the mine and plant on August 20, stated his opinion that the ore in the undeveloped claims of the company would yield from 9 to 13 dwts. per ton.

TWIN LAKES PLACERS.—The manager reports that washing was suspended about the 6th instant, that the total amount of gravel washed for the season amounts to 812,000 cubic yards, and the total value of bullion obtained to $54,386·49: this gives a sum of $2136, as having been cleaned up during the current month. The report and accounts made up to December 31 next will be issued early in the new year, and the directors then expect to be in a position to recommend a dividend.

CRAVEN'S CALEDONIA.—The following fortnightly report has been received from the mine, dated Charters Towers, October 10:—In the underhand stope from No. 8 level the reef is about 8 inches. The crosscut at the end of No. 8 old level has been extended a further 6 feet, making a total of 47 feet from the old level. In the end of this level it is about 12 feet high, with very soft formation, and about 1 foot of good quality stone on the footwall, and 8 inches on the hanging-wall, and over this level I have one man stoping on about 8 inches of reef. In the stopes over the hanging-wall reef the stone averages about 7 inches. The crosscut in the fault in No. 7 level has been extended a further 15 feet, making a total of 90 feet from the starting point. Bunce and party started their tribute on the 7th inst. to pick the stolling over No. 7 old level, Hooper and party started their tribute in the end of No. 6 level on the 8th inst. Bowater and party started their tribute in the end of No. 5 level on the 5th inst. The haulage of quartz for the fortnight is 37 tons, 22 of which went to the mill, and 15 tons now remain in the paddock.—(Signed) G. Cabassi, manager.

BIG BLOW.—Extracts from letters received from the manager, dated October 22: Battery. With the exception of the ore feeders, decking, and fixing water pipe connections, and making and fixing amalgamating tables, we have fixed all the other parts of the battery in position, including the countershafting and pullies. We are still, however, wanting carpenters and bricklayers to complete setting the boilers, and a fitter or two. Our present attenuated staff of men has been incapacitated from doing full duty by an epidemic of diarrhœa, which has been, and is, prevalent in the camp. I think the reason of it is the intense heat we are experiencing.—Engine. This is now erected, and only requires the steam connections to be fixed.—No. 4 water shaft. This has been sunk a further distance of 13 feet, making a total depth from the brace of 245 feet. The ground is a hard diorite, streaked with felspar. Present inflow of water about 2000 gallons per 24 hours. (Note.—This is in addition to the supply obtainable from No. 5 or principal water shaft.) Enclosed I am sending you some scale and sediment taken from the boiler at the water shaft, after three weeks under steam (day and night). I am very pleased with the appearance, and feel we shall experience no difficulty with our boilers, such as troubles the field generally.

BRITISH BROKEN HILL PROPRIETARY.—Mining manager's report for the week ending October 16:—Blackwood shaft. 300 level. West crosscut lengthened 3 feet, total length from plat 56 feet, face in hard country rock.—200 level. Exploration work was suspended on 9th inst. in easterly crosscut off south drive down No. 1 winze. Have been cleaning up and timbering winze since in order to resume sinking in 300 level, which was started to-day. In cleaning up we obtained 3 tons sulphides, assaying 20 per cent. lead, 18 ounces silver per ton, and 19 per cent. zinc. No. 3 winze in long crosscut western extension was sunk 8 feet, total depth 80 feet, with no change in bottom. North drive in long crosscut driven 7 feet, total length 26 feet, with fair grade sulphides showing in face, of which we mined 32 tons; average 21 per cent. lead, 13 ounces silver, and 21 per cent. zinc.—Howell shaft. 300 level. West crosscut extended 3 feet, making total length 137 feet. Face unchanged. Work in east crosscut has been carried on in back of crosscut, following soft friable lead sulphides, which, so far, does not appear to come to this level. We mined 4½ tons sulphides; average 34 per cent. lead, 11 ounces silver, and 21 per cent. zinc.—200 level. South drive started off No. 2. West crosscut driven 14 feet, with splendid faces of sulphides showing everywhere. We mined 61 tons, averaging 22 per cent. lead, 13 ounces silver, and 23 per cent. zinc.—Marsh shaft, 2nd level. The ore chute down winze stopes has pinched up a good deal, consequently reducing the output of oxidised ore from this point, and I am rather afraid that our carbonate ore supplies from here are now nearly exhausted. A fair supply, nevertheless, was obtained during the week. The stopes yielded 36 tons carbonate ore, assaying 21 per cent. lead and 35 ounces silver per ton.—Junction 300 uprise. South drive started down uprise about midway between two levels was driven 10 feet through sulphide ore of medium grade.—Ore shipments. We forwarded following parcel sulphide ore Block 14 Mine during week 133 tons net, containing 33¼ tons lead and 2268 ounces silver. The contents of last week's lot (125½ tons gross) was 31 tons lead and 1980 ounces silver.—Surface. The erection of rock-drilling plant has been completed, and a trial run proved satisfactory. Are now erecting house over engine. A start has been made with new jig plant on western slope of hill, and good progress is being made with the excavation for foundations.—Week's aways. Carbonates, lead 16·5 to 38·5 per cent., silver 22·7 to 97·5 ounces per ton; sulphides, lead 16 to 35·5 per cent., zinc 17·5 to 32 per cent., silver 7·3 to 18·4 ounces per ton.

DON PEDRO.—Mine manager's monthly report, November 2: The mineral extracted this month has been derived from No. 8 and No. 6 shoots, also a small quantity from the Canon shoot at 60 horizon, and the general work has been of fair quality.—No. 8 shoot. The drivage from the winze has been driven 3 fathoms 1 foot through very poor lode. At the forebreast old timbers are met with, which plainly shows that all the south ground has been worked down to the back of the 60 horizon.—Stope north of winze. This has yielded some moderate work throughout the month, but has reached water. Stoped for the month 6 feet.—No. 6 shoot, C stope. Since 17th ult. this stope has been advanced east through mineral of good quality until the 30th, when we intersected an old incline, which will interfere with the produce whilst crossing these old workings which are about 4 fathoms. Driven for the month 4 fathoms 2 feet.—Canon shoot. In my letter of 17th ult. I referred to the 60 north, stating that I was making preparations to start sinking. After all necessary repairs were done, on 26th ult we started to sink on what we suppose to be the line of gold. Progress is somewhat slow, but the lode, so far as seen, is rich, and some nuggets have been found. We hope to work more vigorously on this in the coming month.—70 fathom crosscut. Progress has been slow, owing chiefly to the quantity of water issuing from the forebreast. The ground is hard sandstone, with soft layers intermixed, which makes progress very difficult; therefore, in consequence of this, the line of gold cannot be intersected as early as I expected. Driven for the month 2 fathoms 5 feet 1 inch, total distance driven 4 fathoms 4 feet.—Produce. 478 tons gave 1739 oits. before melting.

GOLDEN DOVE.—Manager's report for October: The following is a report of the work done on the Golden Dove Mine during the month of October:—Dove shaft, No. 1. This shaft is down 66 feet, but has been left idle for a long time, and will require now to be cleaned out and a few sets of timber put in before further sinking and driving can be carried on. The reef at bottom of this shaft is 2 feet 6 inches in width and very rich, as the assays prove in G. W. Rogers' report.—Shaft No. 2. This shaft is now down 60 feet, width of reef at bottom 2 feet 9 inches, and showing a tendency to widen. Various pannings taken shows a good 4 ounce prospect. I am of the opinion that the deeper we go better results will still be obtained.—Shaft No. 3 This shaft is now down 40 feet, width of reef at bottom 2 feet 6 inches, composed principally of slate with small veins of quartz between. There is now every appearance of large quartz making. Samples taken from this shaft show a fair amount of gold. A few feet further sinking will bring us properly into the reef, when I have no doubt but what it will give us equally as good results as the other shafts. There are four other shafts sunk on the line of reef higher up the hill varying in depth from a few feet up to 15 feet, in which gold can be obtained in all, and indications prove better results at a greater depth.—Scott's No. 1 shaft. This shaft is intended both for a working and air shaft, and has now reached a depth of 40 feet width of reef at bottom 3 feet. Various samples taken show an average of 2 ounce prospect. I am pushing on with all possible speed in sinking this shaft so as to get air into the drive being put in at a few feet above the river level, to intercept the different reefs.—Scott's No. 2. This shaft is down 12 feet; the reef here is at present divided, now showing two veins—one 1 foot in width and the other 6 inches, separated by 2 feet of slate. The ore from this shaft is very rich, showing prospects from 6 to 10 ounces.—Mickley's. No further work has been done on this lode beyond tracing it to the extreme end of the property, proving its permanency. Results obtained at the extreme end are, if anything, better than here. This lode was not included in G. W. Rogers' report to you, but was pegged by me later on, and eventually became the property of the company. This lode, taken on an average, is about 1 foot 6 inches in width, and should mill an ounce. The drive to intercept the different reefs is now in 317 feet, and is being pushed on as fast as possible, but until I get a fan, which I am now ordering, am only able to put a day shift on; nothing of importance has so far been cut.—Battery site. A cutting has been made 50 feet by 50 by 13 feet deep, and everything is now ready for the erection of battery, with the exception of mortar blocks, which we are expecting daily, the whole of the machinery, &c., has been got over the river safely, without a hitch of any kind, and is now lying upon the mine. The crossing of the machinery necessitated my letting Mr. Garratt have a number of boys, which would otherwise have been engaged in raising ore. Pump well is now being sunk, and obtained a depth of 36 feet, another 10 feet is required to bring us to the river level, when I shall drive towards the river, and hope by doing so to obtain a constant supply of water for use in the battery.—Marias block. Prospecting on this property is being vigorously carried on with very satisfactory results, am now sinking a shaft on a reef 3 feet 6 inches in width, and running 15 dwts. there are other reefs still to be opened up showing well on the surface, and will undoubtedly prove rich at a depth.—Labour, The labour market is fair. I have now 38 working boys, and expecting more to turn up. I do not anticipate any difficulty in regard to labour. In conclusion, I may state things generally are in a very satisfactory condition, the only thing now remaining is the erection of the battery to put the mine on a sound basis.

LINARES.—Report dated November 20: Pozo Ancho Mine. In the 200 fathoms level driving south of Peill's engine shaft during the past week we intersected Warne's lode, which is small, and composed of carbonate of lime, and letting out but little water. The men are put to drive west on its course. In the 200 west of the same shaft the lode continues regular, but is unproductive at present. The lode in the 155 west is regular and compact, and is valued at 1 ton per fathom. In the 178 west of Warne's crosscut the lode continues very wide and strong.—Los Quinientos Mine: Taylor's engine shaft. In the 185 east the lode is split in two or three branches, each containing spots of ore, but not sufficient to value. The lode in the 165 east has declined a little in value, being now valued at ½ ton per fathom, and the ground has become harder. The 150 east has a better appearance, and is letting out water freely.—Taylor's engine shaft below the 185 fathoms level. The granite is very hard, but the men are making very fair progress in sinking.—Alfonso's winze, sinking below the 130 fathoms level. This winze is situated in bottom of 130 fathoms level east of Taylor's engine shaft, and in advance of the 150 fathoms level, valued at 1 ton per fathom.

MYSORE WEST AND MYSORE-WYNAAD CONSOLIDATED.—Tank Mine, Ootacamund. Monthly report for October. South shaft has been sunk to a depth of 509 feet, making a progress for the month of 20 feet 3 inches. We have this month cut through a valuable lode of quartz in the sink. The quartz turned out to be quite 6 feet wide right across the shaft, and was very rich as it milled 4 ounces per ton. We have now stopped sinking for a short time to explore this quartz after which we shall resume sinking, and when deep enough away from the exploring level we shall cut a plat and start crosscutting for the old lode. 450 level north has been driven to a distance of 422 feet 9 inches, making a monthly progress of 35 feet 9 inches. The end has settled down in a lode carrying 18 inches of quartz worth 12 dwts. per ton. The assay value of this end has been slowly improving. Stope in back of level north of No. 2 rise lode 3 feet wide of mixed stone quartz worth 5 dwts. per ton. Stope south of No. 2 lode 4 feet wide, worth 8 dwts. per ton. Intermediate level north has been driven to 179 feet 9 inches, progress 41 feet, the end contains 1 foot of quartz, worth 4 dwts. per ton. North intermediate stope the lode is 3 feet wide, worth 15 dwts. per ton. South intermediate stope the lode is 8 feet wide, worth 1 ounce per ton. The mill ran 683 hours and crushed 465 tons of quartz which yielded 951 ounces of bar gold. This increase is due to the exceptional richness of the quartz cut at 500 feet in shaft. Such return can hardly be expected to be maintained for 10 head of stamps as it is a long way above the average of the field.

TOLIMA.—The directors have received advices by the mail of November 21 from their mines, of which the following is an abstract:—Frias September estimated returns (120 tons) silver, valued at 33d. per ounce, fine, £5015 5s. 9d.; cost, £3381 4s. 7d.; profit, £1634 1s. 2d. The underground agent reports 73 fathoms 1 foot of ground expended, of which 50 fathoms 3 feet 10 inches were productive, leaving 22 fathoms 3 feet 2 inches of unproductive ground. Writing under date of October 17, the superintendent explains that the output of mineral during the month of September had been to some extent restricted owing to the limited amount of dynamite he felt it prudent to use in view of the uncertainty which then existed of further supplies being procurable—the Government having, owing to the disturbed state of the country, temporarily interdicted the introduction of explosives into the Republic. Having succeeded, however, in getting a special permission from the Minister of War, authorising the transport of explosives for the use of the Tolima Company, the superintendent had been able, at the date of his advices, to resume the extraction of mineral at the usual rate. The account of the progress in the 110 north branch is very satisfactory, both the east and west levels being in productive ground, whilst the sink going down to the 120 fathom level yielded 2 tons of mineral to the fathom, and assayed, at a point 42 feet down, 600 ounces to the ton. Another exploratory work—viz., the 130 fathom west end continued to improve during September and the first week of October, yielding at the latter date 1½ ton of good grade mineral to the fathom; but at the date of writing a falling off in the yield had suddenly occurred, which, however, it was trusted would prove only temporary. As an auxiliary exploratory work the 100 fathom level west is being driven into the unexplored ground extending between the 130 fathom level west and the 70 fathom level west, and the lode in that, the 100 fathom level west end, is said to look very promising. The engine shaft is now sunk 4 feet below the 150 fathom level, and the prospecting winze from the 150 fathom level is 9 feet down but the lode in this winze has much declined in yield, being estimated only at 15 cwts. per fathom, and both the 150 fathom level ends are reported poor. At the Real de Frias operations had also been restricted owing to the uncertainty attending the supply of dynamite, but the 35 fathom west end is reported as continuing to look promising, giving here and there spots of mineral. The 35 fathom east end offers no change to note in the nature of the lode.—Underground report. Engine shaft was sunk 9 feet by 10 men and a boring machine at $300 per fathom, thus being 64 feet as total depth below the sole of the 140 fathom level, and the portion of lode sunk upon remains poor. 150 fathom crosscut to engine shaft was driven 8·5 feet by four men at $130 per fathom. 150 fathom west end hanging-wall part was driven 2·5 feet by four men at $90 per fathom, and it yielded 5 cwts. of mineral per fathom. This is suspended until the above crosscut be communicated to the engine shaft. 150 fathom west end footwall part was driven 9 feet by two men at $70 per fathom upon a strong and well-defined but poor lode. 150 fathom east end was driven 10 feet by two men at $65 per fathom, and the lode continues poor. 150 fathom east winze No. 1 was sunk 5 feet on company account. It is 9 feet as total depth below the sole of the 150 fathom level, and the lode has declined, and now yields in present bottom, 15 cwts. of mineral per fathom. 140 fathom west end was driven 5 feet by two men at $65 per fathom, and the lode continues strong, but poor. 140 fathom east end was driven 8·3 feet by four men at $130 per fathom, thus being 339·3 feet as total east of the west winze. It has intersected a portion of lode that is poor, and same is being driven upon. 140 fathom east back stope No. 1 was stoped 24 feet by four men at $22 per fathom, and it yielded 8 tons of mineral per fathom. 140 fathom east back stope No. 1a was stoped 6 feet on company account, and it yielded 4 tons of mineral per fathom. 140 fathom east back stope No. 1b was stoped 32 feet by four men at $20 per fathom, and it yielded 2 tons of mineral per fathom. The 130 fathom west end was driven 7·2 feet by two men at $75 per fathom, thus being 523·4 feet as total west of the west winze. This shows a further improvement, and it will now yield 1½ ton of good grade mineral per fathom. So far the mineral has been much stronger in the sole than in the roof of the level, yet to date of writing the tendency of the mineral is to be more uniform throughout the forebreast of end. 130 fathom west back stope No. 1 was stoped 25·6 feet by four men at $42 per fathom, and it yielded 1 ton of mineral per fathom. 130 fathom east back stope No. 1 was stoped 10 feet by four men at $35 per fathom, and it yielded 6 tons of mineral per fathom. 130 fathom east back stope No. 1a was stoped 14 feet by four men at $40 per fathom, and it yielded 6 tons of mineral per fathom. 130 fathom east back stope No. 1b was stoped 4·6 feet on company account, and it yielded 4 tons of mineral per fathom. 130 fathom east back stope No. 2 was stoped 24 feet by two men at $35 per fathom, and it yielded 5 cwts. of mineral per fathom. 130 fathom east end from 120 east winze No. 2 was driven 22 feet by two men at $70 per fathom, and the lode continues poor. 130 fathom east winze No. 1 was sunk 15·5 feet by eight men at $150 per fathom, thus being 58·5 feet as total depth below the sole of the 130 fathom level, and the lode remains poor. 120 fathom west back stope No. 3 was stoped 22·7 feet by two men at $28 per fathom, and it yielded 1½ ton of mineral per fathom. 120 fathom west back stope No. 3a was stoped 28 feet by four men at $37 per fathom, and it yielded 2 tons of mineral per fathom. 110 fathom east end was driven 13·4 feet by two men at $60 per fathom, thus being 963·3 feet as total east of the engine shaft, and the lode is unchanged. 110 fathom east end north branch was driven 5 feet by two men at $30 per fathom, and it yielded 15 cwts. of mineral per fathom. 110 fathom west end north branch was driven 12·5 feet by two men at $70 per fathom, and it yielded 1½ ton of mineral per fathom. 110 fathom west winze north branch was sunk 15·7 feet by eight men at $133 per fathom, thus being 31·5 feet as total depth below the sole of the 110 fathom level, and the lode yielded 10 cwts. of mineral per fathom. 90 fathom east end was driven 10·5 feet by two men at $65 per fathom, thus being 1138·8 feet as total east of the engine shaft, and the lode is yet poor. 90 fathom east bottom stope No. 1, was stoped 37·6 feet by two men at $17 per fathom, and it yielded 1½ ton of mineral per fathom. 90 fathom east back stope No. 2 was stoped 27·5 feet by two men at $24 per fathom, and it yielded 1½ ton of mineral per fathom. Shallow adit was driven 18 feet by four men and a boring machine at $75 per fathom, thus being 374 feet as total west of the crosscut, and the lode continues poor. West end from new crosscut was driven 6 feet by two men at $150 per fathom, and it is without change to note.—Real de Frias. 35 fathom west end was driven 19·2 feet by two men at $60 per fathom, and the lode has shown a slight improvement, and has yielded at times some good stones of mineral. 35 fathom east end footwall part was driven 12·5 feet by two men at $70 per fathom, and the lode is unchanged.

RICHMOND CONSOLIDATED.—The manager, under date of October 22, reports as follows:—The shaft is sunk to a depth of 123 feet, and a crosscut east has been put in 15 feet. A crosscut has also been put in west 71 feet. These crosscuts should be close up to reefs, but as water is becoming very scarce all over the field I have again started to sink so as to be able to get a supply on the property. I expect to reach the water level at a depth of 160 feet, or thereabouts. At the lower end (the north end) of the lease the cap of the lease has been laid bare for a distance of about 60 yards. The stone is solid and auriferous, and shows a width on an average of 4 feet of quartz. Developments are very satisfactory.

MOUNT ROWE CONSOLIDATED.—The manager, under date of October 22, reports as follows:—Lease 754. Depth of shaft 152 feet. Crosscut east 49 feet 6 inches. Cut reef in crosscut at 22 feet. North drive along reef 13 feet. Reef 5 feet wide, showing visible gold. South drive 9 feet 6 inches. Reef 4 feet wide, showing visible gold. This a splendid reef and very solid, every piece of stone carrying gold. I applied for exemption on this lease (also 1004), so as to concentrate labour on water shaft on lease 1019. Exemption has been granted. I intend, after reaching water on lease 1019, to sink 754 another 50 feet, and reach water in this shaft. There is some difficulty in getting good miners at present, owing partly to the rush to Hannan's, also to the prevalence of fever amongst the men. The heat has started early—over 100° in the shade this last week. Owing to the scarcity of water, Bayley's battery only uses a very small amount for battery purposes, and as it is used over and over again the water gets very thick, carrying in suspension all the fine gold. To put such stone as the Mount Rowe through would give but a poor return under these conditions, as the gold is fine, so I am trying to make other arrangements. I am pleased to say the properties are opening up satisfactorily, and that as depth is attained the quality of the ore increases in value.

THE ALGERIAN PHOSPHATE CONCESSIONS.

THE report of the Special Commission, consisting of MM. Mastier, Geslin and de Soligny, appointed in August last to inquire into the question of the phosphate concessions at Tebessa, in Algeria, has been published *in extenso* by the *Matin*. It is very long, occupying seven columns of the paper, and very exhaustive, dealing minutely with all the circumstances connected with the granting of phosphate concessions to the British firms of Messrs. Crookstone and Messrs. Jacobsen. It sets forth that the original concessions obtained by M. Chapelle, inspector of roads and bridges, in the name of a relative, Madame Laporte and by M. Dominique Bertagna, member of the Council General of Constantine, were secured without the adequate expert examination required by law. Furthermore, the sanction of the Municipal authorities and of the Prefect was unduly hurried forward; and, finally, the approval of the Governor-General or of the Government was wanting. Consequently, the concession disposed of by Madame Laporte to Mr. Crookstone and that sold by M. Bertagna to Messrs. Jacobsen are held by the Commission to be vitiated. After commenting somewhat severely on the conduct of some of the officials concerned in the matter, the report proceeds to discuss the question of compensation to the present holders, who, having acted in good faith, are entitled to equity to indemnification in case of eviction. Two points have in this question to be considered—the first expenditure of installation and loss of profits. As regards the original outlay for plant, &c., the Commissioners estimate the compensation to Mr. Crookstone at 509,000 frs., and that to Messrs. Jacobsen at 1,000,000 frs. On the other point—that of indemnification for loss of profits—the report observed that it is impossible to fix any sum arbitrarily, and that it is preferable, therefore, to give some general indications on which a calculation may be based. With the present conditions of railways and transport facilities, the two British concessionnaires, and the French holder of another concession, called the Barboutie, which is likewise treated as subject to annulment, would be able to dispose of 6,400,000 tons of phosphates within the term of their concessions—namely, 16 years; but, with greater facilities, such as may justly be anticipated, the three concessionnaries might be able to turn out 27,000,000 to 28,000,000 tons. In conclusion, the report alludes to the competition with American phosphates, but declares that the future of the Algerian product is assured.

At the Cabinet Council, held on Tuesday, the Minister of Justice informed his colleagues that the Public Prosecutor attached to the Algiers Tribunal had been directed to institute a judicial investigation into the circumstances under which the Laporte, Bertagna, and Barboutie Concession contracts were originally obtained.—[Reuter.]

In consequence of recent revelations of official irregularities in Algeria, especially in connection with the Tebessa phosphate concessions and the importation of alcohol, the Government, says the *Petite République*, have urgently summoned M. Cambone, the Governor-General, to Paris, in order to hear any explanation he may have to offer of what has transpired.

RAILWAY WAGONS FOR SOUTH AFRICA.—The Cape of Good Hope Government have distributed orders for railway wagons and carriages, worth from £50,000 to £60,000, between four English firms—namely, the Metropolitan Wagon Company; Brown, Marshalls, and Co.; the Oldbury Wagon Company; and the Lancaster Wagon Company. The orders comprise 200 bogie wagons, 60 high-sided wagons, and 26 brake vans.

Mr. G. E. T. SMITHSON, of Newcastle-upon-Tyne, has joined the board of directors of the Rhodesia Trading Company (Limited).